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What is the alternate material?

February 23, 2009

Mr. Steven C. Riva
Chief, Permitting Section
Air Program Branch
US EPa Region 2
290 Broadway
New York, NY 10007-1866

2009 FEB 27 AM 11:38
DEPP-APB

RE: Essroc San Juan, Inc.
Dorado, PR

Dear Mr. Riva:

Essroc filed at the Puerto Rico Environmental Quality Board (EQB) an application for a construction permit in order to add two new emission units at its Portland Cement Plant located in Dorado, Puerto Rico. These new emission units are required in order to accommodate Essroc's plans to use alternate material in substitution of the clinker produced at their facilities.

emissions?

This project entails the installation of a new hopper and a conveyor belt to handle the alternate material, and also will use the gypsum handling system to handle the balance of the alternate material not processed in the new hopper. Essroc intends to use up to 359,550 Tons per year (TPY) of alternate material. The alternate material will be mixed with the clinker to produce the Portland cement. Essroc will be able to reduce the usage of raw material used in the clinker production up to 561,366 TPY. With these two new emission units Essroc intends to implement changes at its Dorado facility that would enable it to substitute up to the 40% of the clinker with up to 359,550 tons per year of alternate material. In addition, this project will enable Essroc to reduce its energy consumption as result of the reduction of clinker production.

The operation of these new units (hopper and conveyor belt) will not cause Essroc to exceed the significant emission thresholds of the Prevention of Significant Deterioration of Air Quality (PSD) regulations at 40 CFR 52.21(b)(23) for any PSD regulated pollutant and, as such, do not trigger Major New Source Review. Applying the applicability test under the "actual-to-future-projected-actual" analysis per 40 CFR 52.21(a)(2)(iv)(c), these revisions do not constitute a Major

Modification under PSD. Furthermore, these changes do not constitute an inappropriate permit relaxation under 40 CFR 52.21(r)(4).

Essroc intends to replace the same amount clinker not used or produced with alternate material to produce up to 850,000 TPY of Portland cement. Essroc would be able to reduce up to 1.56 tons of limestone used in the clinker production per ton of clinker not produced. The substitution of clinker with alternate material would allow reducing up to 561,366 tons per year of limestone used in the clinker production.

Essroc understands that the use of these alternate raw materials will represent an emission reduction at the facilities as shown in the attached document. The alternate material project under consideration does not contemplate an increase in any current permitted emission limit, for which it has been in compliance.

The Essroc facility is an existing major stationary source, as defined by the PSD regulations at 40 CFR 52.21(b)(1). For a modification at an existing major source to be PSD affected, it must result in emissions of one or more pollutants regulated under the Clean Air Act in an amount greater than or equal to the "significance" levels listed in the PSD regulations at 40 CFR 52.21(b)(23). The operation of the new units associated with this proposed change would enable Essroc to reduce its clinker production requirements at its existing furnace. However, none of the projected increases in PSD regulated pollutants associated with the new units are above the PSD "significance" levels and, as such, Major New Source Review would not be triggered.

Specific emission calculations using the actual-to-projected-actual methodology under 40 CFR 52.21(a)(2)(iv)(a), included herewith as Attachment A, demonstrate that this proposal does not trigger PSD. Attachment A also includes a 52.21(r)(4) evaluation to demonstrate that the permit revision will not result in a relaxation of PSD-avoidance permit limits.

Please let me know if you have any questions or need any additional information associated with proposed permit revision. The time and attention provided to this matter and interest in expediting this evaluation is greatly appreciated.

Very truly yours,

Beatriz Rivera
Environmental Engineer

Attachment
cc: Air Quality Area, PR EQB

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LIST OF TABLES

EXECUTIVE SUMMARY

Essroc San Juan, Inc. (Essroc) is a company dedicated to the Portland Cement Manufacturing, located at Dorado Puerto Rico. Essroc submitted to the Environmental Quality Board (EQB) a construction permit application with the purpose to add two new emission sources.

Essroc proposes to use alternate material in substitution of the clinker produced at their facilities. Essroc plans to implement changes at its Dorado facility that would enable it to substitute up to the 40% of the clinker with up to 359,550 tons per year of alternate material.

Essroc evaluated the following two different operation alternatives for the use of alternate material in substitution of the clinker to produce Cement.

- The first alternative is to replace the imported clinker (up to 167,450 TPY) and the balance of produced clinker, using up 359,550 TPY of alternate material. Essroc will mix the alternate material with the produced clinker to produce the final product, Portland cement.
- The second alternative is the substitution of the clinker produced with alternate materials. Essroc will reduce up to 359,550 tons per year the clinker production.

In both cases Essroc would be able to replace the same amount clinker not used or produced with alternate material to produce up to 850,000 TPY of Portland cement.

Essroc would be able to reduce 1.56 tons of limestone used in the clinker production per ton of clinker not produced. The substitution of clinker with alternate material would allow reducing up to 561,366 tons per year of limestone used in the clinker production.

Essroc understands that the use of these alternate raw materials will represent an emission reduction at the facilities as shown later in this document.

The alternate material project under consideration does not contemplate an increase in any current permitted emission limit, for which it has been in compliance. Please refer to Appendix A "PSD Non-Applicability Determination". Essroc will maintain the actual emission limits. In this document Essroc will demonstrate that federal Prevention of Significant Deterioration (PSD) requirements are not applicable to the proposed project.

As necessary, Essroc will amend its current construction and Title V permits issued by the Puerto Rico EQB (PR-EQB).

This document is the support for our request for a US-EPA determination that Essroc has adequately demonstrated that a PSD Pre-Construction Permit is not required to implement the proposed changes. It will describe the proposed changes, calculate emission rates, and demonstrate compliance with all applicable air quality regulations.

1 PROPOSED OPERATIONAL CHANGES

1.1 PURPOSE AND NEED

Essroc has been looking for alternatives to reduce the energy usage and also to reduce its ecological footprint and emissions to the environment. One of the alternatives evaluated by Essroc is the use of alternate materials in substitution of the clinker produced. Essroc plans to use up to 359,550 ton per year of alternate material in substitution of produced and/or imported clinker.

This project entails the installation of a new hopper and a conveyor belt to handle the alternate material.

1.2 EXISTING FACILITIES

Essroc San Juan, Inc. (Essroc) is a company dedicated to the Portland Cement Manufacturing, located at Dorado Puerto Rico. Essroc is permitted to produce up to 682,550 TPY of clinker, an intermediate product, result of the burning of limestone on a rotary oven. This intermediate material is part of the final product. The total Portland cement manufacturing is limited to 850,000 TPY.

1.3 MODIFICATION PROJECT DESCRIPTION

- Essroc is planning to use alternate materials in substitution of the clinker produced and/or imported at their Dorado facilities. Essroc plans to use up to 359,550 Tons per year (TPY) of alternate material. The alternate material will be mixed with the clinker to produce the Portland cement.
- This project entails the installation of a new hopper and a conveyor belt to handle the alternate material, and also will use the gypsum handling system to handle the balance of the alternate material not processed in the new hopper.
- Essroc will be able to reduce the usage of raw material used in the clinker production up to 561,366 TPY
- Essroc will reduce the energy consumption as result of the reduction of clinker production.

1.4 OPERATION

Essroc will be able to reduce the clinker production and will use one of the alternate raw materials in the cement production. The only equipments to be

added are a hopper and a conveyor belt to handle the limestone and the slag. No other changes are required to use the alternate materials.

1.5 *Air Permits Modifications Related to the Alternate Raw Material*

The Project consists primarily of the substitution of clinker produced and/or imported with alternate materials. Also, this project entails the installation of a new hopper and a conveyor belt to handle the alternate material.

Accordingly, Essroc is hereby submitting our formal determination that Essroc has adequately demonstrated that a PSD Pre-Construction Permit is not required to implement the proposed changes.

The Air Location Sitting Approval Permit (Rule 201) of the Control of Atmospheric Pollution is not required for the same reasons that make PSD non applicable to this project.

In addition, Essroc will incorporate any permitted changes in the Title V Operating Permit.

Section 2 has a detailed description of the emissions and the procedures to estimate them.

2 CURRENT PERMITTED, ACTUAL, AND PROJECTED FUTURE EMISSION RATES AT THE ESSROC FACILITY

This section contains air emission rate information relevant to the evaluation being performed for the Essroc facility in Dorado. The analysis below lists:

- Current permitted emission limits, based on the most recent air permit issued by the US-EPA, Region 2
- Contemporaneous actual emission rates (average of 24 consecutive months), going back the last ten (10) full calendar years, and
- Projected future emissions after the implementation of the proposed changes.

2.1 CURRENT PERMITTED EMISSIONS

The Essroc facility in Dorado has been operating and currently operates under a Construction Permit issued by the EQB incorporating conditions requested by EPA, Region 2 to avoid applicability of the federal Prevention of Significant Deterioration (PSD) requirements. Current plantwide emission limits, summarized in Table 2.1 below, are based on limits that appear in the final permit and requested limits in the permit application.

Table 2.1 Essroc's Current Plantwide Permitted Emissions

Pollutant	Potential to Emit (tons/yr)
Nitrogen Oxides (NOx)	1,433
Sulfur Dioxide (SO_2)	450
Carbon Monoxide (CO)	N/A
Total Particulate Matter (PM)	567.87
Particulate Matter Less Than 10 Microns (PM_{10})	507.27
Lead (Pb)	N/A
Volatile Organic Compounds (VOC)	N/A ? 40?

2.2 CONTEMPORANEOUS (BASELINE) EMISSION RATES

Contemporaneous actual emissions (also called "baseline" emissions) were computed as part of the process to determine and/or rule out PSD applicability of the proposed changes to the cement manufacturing. Therefore, in order to

estimate the baseline emissions, Essroc used known historical information and some assumptions as explained below.

For the utilization of alternate material, a new hopper and conveyer belt will be added.

Table 2.2 shows the estimated baseline emissions for any given previous 24 months resulting from cement manufacturing. Emissions from years 2004 and 2005 emission were used to calculate the contemporaneous emissions

Table 2.2 *Contemporaneous (Baseline) Emission Rates*

Pollutant	Actual Emissions (tons/yr)
Nitrogen Oxides (NOx)	1,217.50
Sulfur Dioxide (SO_2)	325.88
Carbon Monoxide (CO)	1,072.56
Total Particulate Matter (PM)	359.70
Particulate Matter Less Than 10 Microns (PM_{10})	336.51
Lead (Pb)	0.02
Volatile Organic Compounds (VOC)	34.79

2.3 *PROJECTED POTENTIAL EMISSION RATES FROM THE CEMENT MANUFACTURING AFTER PROPOSED CHANGES ARE IMPLEMENTED*

Table 2.3 shows the projected emission rates resulting from the maximum utilization of 359,550 TPY of alternate material in substitution of 167,450 TPY of imported clinker and 192,100 TPY of produced clinker.

Table 2.3 *Projected Emission Rates – Substitution of Imported and Produced Clinker*

Pollutant	Potential to Emit (tons/yr)
Nitrogen Oxides (NOx)	1,029.95
Sulfur Dioxide (SO_2)	290.57
Carbon Monoxide (CO)	907.33
Total Particulate Matter (PM)	304.15
Particulate Matter Less Than 10 Microns (PM_{10})	284.0
Lead (Pb)	0.02
Volatile Organic Compounds (VOC)	29.43

The emissions are based on maximum substitution

167,450 imported clinker

Table 2.4 shows the projected emission rates resulting from the utilization of 359,500 TPY of alternate material in substitution of produced clinker.

682,550 − 359,550 alt. mat. = 323,000 produced clinker

Table 2.4 Projected Emission Rates - Substitution of Produced Clinker

Pollutant	Potential to Emit (tons/yr)
Nitrogen Oxides (NOx)	678.30
Sulfur Dioxide (SO_2)	228.32
Carbon Monoxide (CO)	597.55
Total Particulate Matter (PM)	277.10
Particulate Matter Less Than 10 Microns (PM_{10})	273.40
Lead (Pb)	0.012
Volatile Organic Compounds (VOC)	19.38

The emissions are based on maximum substitution

Import = 167,450 TPY
Produced = 323,000 TPY
alternate = 359,550 TPY

The significance analysis comparing projected actual emissions to baseline to determine potential PSD applicability is performed in Section 3. Detailed calculations and supporting documents are in Appendix D.

Essroc will maintain the current permitted Emissions.

3 AIR REGULATORY EVALUATION

The changes that Essroc proposes to implement at its cement manufacturing plant in Dorado, PR may cause emission rates of regulated pollutants to change due to the requirement to include the emissions from new alternate materials. Therefore, there is the potential that some federal and Puerto Rico air quality regulations may be applicable and need to be addressed. This section evaluates fully federal and state air quality regulations, reviews those that may be applicable, and evaluates which ones are applicable and how Essroc proposes to comply with every applicable air quality regulation.

3.1 PREVENTION OF SIGNIFICANT DETERIORATION

The Prevention of Significant Deterioration (PSD) program is contained in 40 CFR Parts 51 through 53. In short, PSD regulates certain major facilities proposing to incorporate changes that cause a "significant" net increase in emissions of a regulated compound. Facilities subject to PSD must make special provisions to ensure that a National Ambient Air Quality Standard (NAAQS) is not exceeded.

PSD applicability is a two-step process. First, a PSD-applicable facility must be a major source, as defined in PSD. This definition is different from the definition of a major source for "Title V" facilities in 40 CFR Part 70. For a specially listed industrial category in PSD, a source is major if it has the potential to emit at least 100 tpy of a regulated compound. Cement plants are one of the 28 special industrial categories listed in PSD. The existing Essroc facility does have the potential to emit at least one regulated compound at an annual rate exceeding 100 tpy. Therefore, the Dorado facility meets the first PSD applicability standard.

The second step is to determine whether a proposed emission increase of a regulated compound is "significant", as defined in PSD. PSD requires an applicant to determine "baseline" emissions. For each regulated compound, this baseline emission rate should be subtracted from the future maximum annual emission rate to determine if the emission increase equals or exceeds the significant amount for that pollutant as defined under 40 CFR 52.21 (b) (23) and under the Puerto Rico Regulation for the Control of Atmospheric Pollution. If the emission increase exceeds a PSD significance threshold, then the facility has met the second step of the process, and the compound is subject to PSD review. It is possible that a proposed modification would have certain compounds subject to PSD review and others exempt.

Should a proposed modification at a major facility result in a significant emissions increase, as defined by PSD, the applicant must receive a PSD Pre-Construction Permit before the modification is implemented. The facility must install Best Available Control Technology (BACT) for all applicable compounds. This is broadly defined as the most stringent control strategy taking into consideration economic, energy, and environmental factors. In addition, the applicant must perform an approved dispersion modeling study to demonstrate that the additional ground-level impacts of the compounds in question will not cause a NAAQS or a PSD increment level to be exceeded.

only those PSD-affected?

3.1.1 *Baseline Emissions*

Baseline emissions are determined based on the information provided in Section 2.2. Emission rates are determined for the cement manufacturing. Emissions from years 2004 and 2005 were used to calculate the contemporaneous emissions.

3.1.2 *Proposed Future Maximum Emissions and Determination of PSD Applicability*

actual?

As discussed in Section 2.3, the proposed modifications would potentially modify some emission rates from the handling of alternate materials. Table 3.1 below summarizes projected future emissions and compares them to baseline emissions to determine PSD applicability assuming maximum material substitution.

Emissions include those from combustion?

Table 3.1 PSD Applicability Determination - – Substitution of Imported and Produced Clinker

Table 2-1 1433 450 N/A 567.87 507.27 N/A N/A

	NO_x (tpy)	SO_2 (tpy)	CO (tpy)	PM (tpy)	PM_{10} (tpy)	Lead (tpy)	VOC (tpy)
Baseline Emissions	1,217.50	325.88	1072.56	359.70	336.51	0.02	34.79
Projected Emissions (substitution of imported/ Produced clinker)	1,029.95	290.57	907.33	304.15	284.0	0.02	29.43
Increase Emission Change	-187.55	-35.31	-165.23	-55.55	-52.51	0.00	-5.36
Significant Emission Rate	40	40	100	25	15	0.6	40
PSD Affected?	No	No	No	No	No	No	No

Current Plantwide Permitted Emissions

Table 2-2 Actual 2004-2005

Table 2-3

Table 2-4 678.30 228.32 597.55 277.10 273.40 0.012 19.38

Table 3.2 *PSD Applicability Determination – Substitution of Imported and Produced Clinker II*

	NOx (tpy)	SO_2 (tpy)	CO (tpy)	PM (tpy)	PM_{10} (tpy)	Lead (tpy)	VOC (tpy)
Baseline Emissions	1,217.50	325.88	1072.56	359.70	336.51	0.02	34.79
Projected Emissions (substitution of Produced clinker)	678.30	228.32	597.55	277.10	273.40	0.01	19.38
Increase	-539.20	-97.56	-475.01	-82.6	-63.11	-0.01	-15.41
Significant Emission Rate	40	40	100	25	15	0.6	40
PSD Affected?	No	No	No	No	No	No	No

The PM potential emissions from the clinker material handling as compared to the potential emissions of alternate material handling are lowered from 18.1 to 7.01 TPY. This represents a net emission reduction of 11.4 TPY of PM. The PM-10 potential emissions from the clinker material handling as compared to the potential emissions of alternate material handling are lowered from 8.52 to 5.39 TPY. This represents a net emission reduction of 3.13 TPY of PM-10.

According to Table 3.1 and Table 3.2 above, , there are no significant emissions increases for any regulated air pollutant under 40 CFR 52.21 and under the Puerto Rico Regulation for the Control of Atmospheric Pollution associated with this project and, thus PSD is not applicable to any compound of this proposed project.

3.2 *NONATTAINMENT NEW SOURCE REVIEW*

Nonattainment New Source Review (NSR) regulations apply to project sites in which at least one NAAQS is not met. Typical NSR rules have some similarities to PSD, but are more stringent.

Puerto Rico is in attainment with all NAAQS. Therefore, NSR does not apply to any proposed modification of a facility on the Island.

3.3 *NEW SOURCE PERFORMANCE STANDARDS*

Federal New Source Performance Standards (NSPS) apply to facilities in a given source category built new or modified after a certain published date. Essroc is affected by NSPS for Portland Cements Plant, 40 CFR 60 Subpart F. The NSPS affects the clinker manufacturing operations.

3.4 *National Emission Standards for Hazardous Air Pollutants*

The National Emission Standards for Hazardous Air Pollutants (NESHAP) is a series of rules applied to different industries for the enhanced control of 188 federally-listed hazardous air pollutants (HAPs). NESHAP requires an affected facility to install and operate Maximum Achievable Control Technology (MACT) to control those HAPs most likely to be emitted by the industry's processes. MACT is a stringent standard based on what facilities in the industry were achieving at the time the rule was being considered.

The new emission sources to be installed and the use of alternate material at Essroc are not a HAP emitting sources. Therefore, NESHAP does not apply to the proposed modification.

4 APPENDICES

Appendix A

PSD Non-Applicability Determination

Same as Table 3.1

Evaluación PSD para la Substitución de Clinker con Materiales Alternos en la Producción de Cemento Portland

	PM	PM-10	SOx	NOx	VOC	CO	Pb
Emisiones Base	359.70	336.51	325.88	1,217.50	34.79	1,072.56	0.02
Emisiones proyectadas	285.74	275.49	290.57	1,029.95	29.43	907.33	0.02
Incremento en Emisiones	-73.96	-61.02	-35.31	-187.55	-5.36	-165.23	0.00
Procesamiento de material alterno	18.41	8.51	N/A	N/A	N/A	N/A	N/A
Cambio Neto	-55.55	-52.51	-35.31	-187.55	-5.36	-165.23	0.00
Limite PSD	25.00	15.00	40.00	40.00	40.00	100.00	0.60
Aplicabilidad de PSD	NO	NO	NO	NO	NO	NO	NO

Las emisiones están expresadas en toneladas por año

La utilización de 359,550 toneladas al año de material alterno en la producción de Cemento Portland representa una reducción en las emisiones de los contaminantes criterio por lo cual el cambio no afecta la reglamentación para la Prevención de Deterioro Significativo al Ambiente (PSD).